



Modified Diets for Diabetes Management

General Description

There is no one standard “diabetic diet” that is appropriate for all patients with diabetes. Diets should be planned to meet the individualized needs of the patient. The goals of medical nutrition therapy for diabetes are to:

- Achieve and maintain near-normal blood glucose levels by balancing food, insulin, and activity.
- Achieve optimal lipid levels.
- Provide adequate calories for reasonable weight for adults and normal growth and development for children and adolescents.
- Prevent or reduce acute and chronic complications of diabetes.
- Improve overall health through optimal nutrition¹.

Indications for Use

These recommendations are appropriate for patients with Type 1 or Type 2 diabetes.

Type 1 Insulin-dependent (IDDM)

This is a chronic condition in which the pancreas makes little or no insulin. It can occur in both children and adults. Individuals with type I diabetes are dependent on insulin injections to prevent ketosis and to stabilize blood glucose levels².

TYPE 2 Non-insulin-dependent (NIDDM)

Non-insulin dependent diabetes usually results from resistance to the effects of insulin. The majority of subjects with Type 2 diabetes are obese. Onset is usually after age 40. Some individuals with Type 2 diabetes can control their blood glucose level with diet and exercise alone, while others require oral hypoglycemic agents and/or insulin³.

Nutritional Adequacy

In comparison to the Recommended Dietary Allowances, diets below 1200 calories may be deficient in calcium and iron for premenopausal females, and calcium, niacin, thiamine, riboflavin, and vitamin A for males. The use of a multivitamin and mineral supplement may be appropriate for persons following diets 1200 calories or less.

Medical Nutrition Therapy

The 1994 nutrition recommendations from the American Diabetes Association¹ strongly state that a dietitian should individualize the medical nutrition therapy for each person with diabetes. This includes self-management education to promote optimal glycemic control. For insulin-users, insulin therapy needs

Modified Diets for Diabetes Management

to be integrated into usual eating and exercise habits, with emphasis on consistency of food intake synchronized with time action of insulin, blood glucose monitoring, and exercise. For those with Type 2 diabetes, the primary focus should be on achieving blood glucose goals, rather than on weight loss per se. Improving food choices and eating behaviors, moderate weight loss if indicated, as well as spacing of meals and snacks are emphasized. General nutrition recommendations for individuals with diabetes mellitus are outlined below.^{1,4,5}

Calories

Adequate calories for maintaining or attaining reasonable weights for adults, normal growth and development for children and adolescents, and adequate calories during pregnancy and lactation.

Protein

10 to 20% of calories per day. With onset of nephropathy, restrict to adult RDA (0.8 g/kg body weight/day).

Fat

Percentage of calories from total fat is individualized: it is usually in the range of 20 to 30%. The dietitian will determine the need to control total fat, saturated fat, contingent on diagnosis and any metabolic risk factors for cardiovascular disease identified. Saturated fat should provide less than 10% of calories per day. Dietary cholesterol should be <300 mg/day. Patients with Type 2 diabetes and elevated triglycerides may benefit from a moderate increase in monounsaturated fats with a corresponding decrease in carbohydrate; this approach may be contraindicated in obese patients.

Carbohydrate

Percentage of calories from carbohydrates is individualized based on the nutrition assessment. Carbohydrate-containing foods generally provide 50 to 60% of total calorie intake. This diet emphasizes a consistent intake of carbohydrate containing foods meal-to-meal and day-to-day to optimize glycemic control.

Sucrose

Foods containing sucrose and other simple sugars can be incorporated into the diet, providing they are made part of the meal plan and not eaten in addition to the plan. Sucrose and sucrose-containing foods often are not nutrient-rich, and their intake should be evaluated by a dietitian.

Other Nutritive Sweeteners

Use is acceptable.

Fiber

Intake recommendations are the same as for the general public (20 to 25 g/d).

Sodium

Recommendations the same as for general population; for individuals with hypertension, not more than 2400 mg/d.

Alcohol

For persons using insulin, no more than 2 alcoholic beverages, which should always be consumed with a meal. For persons not on insulin and concerned with caloric intake, the calories need to be accounted for.

Modified Diets for Diabetes Management

Micronutrients

No need for vitamin/mineral supplement if diet is adequate.

There are a variety of factors to consider when determining goals and an appropriate meal plan for an individual with diabetes, including level of glycemic control, food preferences, pharmacologic therapy, lifestyle and educational needs. Likewise, there are a variety of meal planning approaches that may be used to meet the needs of the diabetic patient.

Basic nutrition guidelines may be provided to aid the individual in selecting an adequately balanced eating plan, and for making appropriate food choices for managing diabetes. The diet is sometimes referred to as “Healthy Food Choices” and is based on the Food Guide Pyramid.

When a more individualized plan of eating is indicated, more structured approaches are required. These include:

- Menu approaches—providing daily menus that a patient can follow in a rote manner.
- Exchange list approaches—providing a meal plan using nutrient based groupings of foods, or exchanges.
- Counting approaches—identifying a specific procedure for counting calories, fat, and/or carbohydrates.
- Meal planning approaches for management of intensive insulin therapy—matching food with insulin through carbohydrate-focused counting techniques⁶.

The dietitian will determine which approaches are most appropriate for the patient. The meal plan will then be individualized, and counseling will be provided as indicated.

Guidelines

In order that the diet provided can best meet the individual needs of the diabetic patient, the dietitian will be responsible for completing a nutrition assessment and developing an individualized care plan within 24 to 48 hours following receipt of the diet/order consult. An appropriate meal plan will then be instituted based on the treatment goals established, and described in the medical record.

The physician should indicate the following when ordering the diet for an individual with diabetes:

- a weight goal (weight maintenance, weight loss, or weight gain/hypermetabolic needs)
- whether or not the patient is receiving insulin

Until the dietitian is able to complete the nutrition assessment and determine the most appropriate calorie level to meet the designated weight goal, the following default calorie levels (based on RDA estimates reflecting age and gender differences) will be used:

Modified Diets for Diabetes Management

	Weight loss (Calories)	Weight Maintenance (Calories)	Weight Gain/ Hypermetabolic (Calories)
Children			
1-3 years	*	1500	1800
4-6 years	1500	1800	2200
7-9 years	1500	2000	2500
Women			
10 years	1500	1800	2200
Men			
10-50 years	2000	2500	2800
>50 years	1800	2200	2500

* Calorie restriction usually not appropriate for this age group.

Calories and carbohydrate for default diets will be distributed among three meals and an HS snack. Diets providing 2200 calories or more will also include a small afternoon snack. Diets will be based on the food exchange system⁷ in conjunction with calculated carbohydrate, calorie, and nutrient composition of individual menu items.

Example meal patterns and meal plans are shown on the following pages.

References

1. American Diabetes Association. Nutrition recommendations and principles for people with diabetes mellitus (Position statement). *Diabetes Care* 17:519-22, 1994.
2. Physician's Guide to Insulin-Dependent (Type I) Diabetes Diagnosis and Treatment. American Diabetes Association, Inc., 1988.
3. Physician's Guide to Non-Insulin-Dependent (Type II) Diabetes Diagnosis and Treatment. American Diabetes Association, Inc., 1988.
4. Franz MJ, Horton ES, Sr, Bantle JP, Beebe CA, Brunzell JD, Coulston AM, Henry RR, Hoogwerf BJ, Stacpoole PW.
5. Nutrition principles for the management of diabetes and related complications (American Diabetes Association technical review). *Diabetes Care* 17:400-418, 1994.
6. American Diabetes Association. Maximizing the Role of Nutrition in Diabetes Management. 1994.
7. Diabetes Care and Education Practice Group of the American Dietetic Association. Meal Planning Approaches for Diabetes Management: 2nd ed. 1994.
8. Exchange Lists for Meal Planning. The American Diabetes Association, Inc. and the American Dietetic Association, 1995.

Modified Diets for Diabetes Management

Sample Meal Patterns Based on Exchange Lists

	Calories							
	1200	1500	1800	2000	2200	2500	2800	3000
Breakfast								
Carbohydrate Group	2.5	3	4	4	4	5	6	6
Starch	1	1	2	2	2	2	3	3
Fruit	1	1	1	1	1	2	2	2
Milk	.5*	1*	1*	1*	1†	1†	1†	1†
Vegetables	as desired							
Meat Group†	0	1	1	1	1	1	2	2
Fat Group	1	1	1	1	1	1	1	2
Lunch								
Carbohydrate Group	2.5	4	4	5	5	5	5	6
Starch	1	2	2	2	2	3	3	4
Fruit	1	2	2	2	2	2	2	2
Milk	.5*	0	0	1*	1*	0	0	0
Vegetables	as desired							
Meat Group†	2	2	2	2	2	2	2	2
Fat Group	1	1	1	2	2	1	2	2
Afternoon Snack								
Carbohydrate Group					1	2	2	3
Starch					1	2	2	2
Fruit					0	0	0	1
Milk					0	0	0	0
Vegetables					as desired			
Meat Group†	1	1	1	1	0	0	1	1
Fat Group	1	1	1	1	0	0	0	0
Dinner								
Carbohydrate Group	2.5	3	4	5	5	6	6	6
Starch	1	2	2	3	3	3	3	3
Fruit	1	1	2	1	2	2	2	2
Milk	.5*	0	0	1*	0	1†	1†	1†
Vegetables	as desired							
Meat Group†	3	3	3	3	3	3	3	3
Fat Group	1	2	2	2	2	2	2	2

Modified Diets for Diabetes Management

HS Snack								
Carbohydrate Group	1.5	2	2	2	3	3	4	4
Starch	1	1	1	2	2	2	2	2
Fruit	0	0	0	0	0	0	1	1
Milk	.5*	1*	1*	0	1†	1†	1†	1†
Vegetables	as desired							
Meat Group‡	0	0	1	1	2	2	2	2
Fat Group	0	0	1	1	1	1	1	1
Daily Totals								
Carbohydrate Group	10	13	15	17	19	22	24	26
Starch	4	6	7	9	10	12	13	14
Fruit	3	4	5	4	5	6	7	8
Milk	2*	2*	2*	3*	3†	3†	3†	3†
Vegetables (3 servings = 1 CHO exchange)	1	1	1	1	1	1	1	1
Meat Group‡	5	6	7	7	8	8	10	10
Fat Group	3	4	5	6	6	5	6	7

* skim milk

† 2% milk

‡ based on medium-fat meats and substitutes

Suggested Meal Plans

Breakfast	Lunch	Afternoon Snack 1200 CALORIES	Dinner	HS
	2-3 oz. Meat	None	2-3 oz. Meat	3 Graham Crackers
1 Slice Toast	1 Serving Potato or Sub		1 Serving Potato or Sub	1/2 cup Skim Milk
	Vegetables		Vegetables	
	Salad/ Nonfat Dressing		Salad/ Nonfat Dressing	
1 Serving Fruit/Juice	1 Serving Fruit		1 Serving Fruit	
1 Serving Margarine	1 Serving Margarine		1 Serving Margarine	
1/2 cup Skim Milk	1/2 cup Skim Milk		1/2 cup Skim Milk	
Coffee/Tea	Coffee/Tea		Coffee/Tea	

Modified Diets for Diabetes Management**1800 CALORIES**

1 Egg or Sub	2-3 oz. Meat	None	2-3 oz. Meat	1 oz. Meat
1 Serving Cereal	1 Serving Potato or Sub		1 Serving Potato or Sub	1 Slice Bread
	Vegetables		Vegetables	1 Serving Lite Mayo
	Salad/ Nonfat Dressing		Salad/ Nonfat Dressing	1 Serving Lite Mayo
1 Slice Toast	1 Slice Bread		1 Slice Bread	1 cup Skim Milk
1 Serving Fruit/Juice	2 Servings Fruit/Juice		2 Servings Fruit/Juice	
1 Serving Margarine	1 Serving Margarine		2 Servings Margarine	
Coffee/Tea	Coffee/Tea		Coffee/Tea	

2500 CALORIES

1 Egg or Substitute	2-3 oz. Meat	6 Graham Crackers	2-3 oz. Meat	2 oz. Meat
1 Serving Cereal	2 Servings Potato or Substitute		2 Servings Potato or Substitute	
	Vegetables		Vegetables	
	Salad/ Nonfat Dressing		Salad/ Nonfat Dressing	1 Serving Lite Mayo
1 Slice Toast	1 Slice Bread		1 Slice Bread	2 Slices Bread
2 Servings Fruit/ Juice	2 Servings Fruit/Juice		2 Servings Fruit/Juice	
1 Serving Margarine	1 Serving Margarine		2 Servings Margarine	
1 cup 2% Milk			1 cup 2% Milk	1 cup 2% Milk
Coffee/Tea	Coffee/Tea		Coffee/Tea	